



**COLLABORATIVE PLANNING, FORECASTING, AND REPLENISHMENT IN  
THE GROCERY INDUSTRY AND DEFENSE COMMISSARY AGENCY**

GRADUATE RESEARCH PROJECT

Raymond H. Smith, Jr., Major, USAF

AFIT/MLM/ENS/04-11

**DEPARTMENT OF THE AIR FORCE  
AIR UNIVERSITY**

**AIR FORCE INSTITUTE OF TECHNOLOGY**

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**Wright-Patterson Air Force Base, Ohio**

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GROCERY INDUSTRY AND DEFENSE COMMISSARY AGENCY

GRADUATE RESEARCH PROJECT

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the

Degree of Master of Logistics Management

Raymond H. Smith, Jr., BS, MS

Major, USAF

September 2004

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

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Approved:

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Stephan P. Brady, Ph.D. (Advisor)

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Date

## **Abstract**

The Defense Commissary Agency (DeCA) continually strives to improve the level of customer service it provides to its patrons. The *DeCA Business Guide: A Business Guide for Marketing to the Defense Commissary Agency* provides a foundation for how DeCA conducts business with its suppliers. DeCA's mission is to "ensure military readiness and retention of quality personnel by providing a part of the military compensation package," and its goal is to provide "quality goods at the lowest possible cost to authorized patrons" (2002: 2).

This project looks at DeCA's current business processes as well as the relatively new business process of Collaborative Planning, Forecasting, and Replenishment (CPFR) used by some of the major supermarket chains in the commercial grocery industry. In what areas can DeCA realize performance improvements by adopting CPFR? And what strategies would prove effective in implementing CPFR at DeCA?

This project is not offering any significant statistical analysis, but it is attempting to provide a further understanding of DeCA's business processes and how those processes may be enhanced through CPFR. In turn, DeCA's mission and goal may not only be more easily met, but DeCA's processes may also become more in line with their commercial counterparts.

*To Father and Mother*

## **Acknowledgments**

I would like to express my sincere appreciation to my faculty advisor, Lieutenant Colonel Stephan P. Brady, Ph.D., for his enduring patience, understanding, and instruction throughout this graduate research project. His knowledge and insight proved to be invaluable. He was a sounding board for ideas and pointed me in the right direction.

I am also indebted to the Defense Commissary Agency for their patience and understanding in contributing to the success of this research. In addition, I would like to thank my MLM IDE classmates whose support and friendship really helped me through this program.

I would also like to thank my wife. Without her patience, tolerance, and especially her love, the completion of this research project would not have been possible. You are truly a blessing in my life.

Finally, I would like to thank God for giving me the ability to accomplish the many challenges placed before me.

Major Raymond H. Smith, Jr.

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# **COLLABORATIVE PLANNING, FORECASTING, AND REPLENISHMENT IN THE GROCERY INDUSTRY AND DEFENSE COMMISSARY AGENCY**

## **I. Introduction**

### **Chapter Overview**

This chapter provides a background for the research topic of Collaborative Planning, Forecasting, and Replenishment (CPFR) in the grocery industry and its possible application in the Defense Commissary Agency (DeCA). It presents the specific problem and objective for this research, namely, despite past improvements and efforts to provide the best possible benefits for its patrons; can DeCA enhance these benefits and cost savings by adopting a collaborative business process with its trading partners? In addition, this chapter will state the overall research question and provide the four investigative questions that will be used during the course of this research. It also outlines possible limitations the research may confront while gathering data from DeCA and the commercial grocery industry. Finally, it will provide a chapter summary and preview the remaining chapters of this research project.

### **Background**

Bruce and Ireland point out that CPFR is a relatively new business process that owes its emergence into the commercial market to Wal-Mart Stores, Inc. when, in 1995,

the retail giant formed a working group with Warner-Lambert Company to pilot a new collaboration model to forecast and replenish Listerine in its stores. That new model was originally called Collaborative Forecasting and Replenishment (CFAR). The goal was to eventually develop industry standards for business to business (B2B) collaboration using the internet, similar to what was done with Electronic Data Interchange (EDI) during the 1980s (2002: 7).

The successful pilot by Wal-Mart Stores, Inc. and Warner-Lambert Company led to the creation of the Voluntary Inter-Industry Commerce Standards (VICS) sponsored CPFR working group in 1996. At this time, due to the importance of planning in any collaborative effort, planning was added to CFAR to become the current CPFR process. The CPFR working group is still active and has over 80 member companies (Bruce & Ireland, 2002: 7).

Although CPFR emerged in 1995, it gained notoriety in the grocery industry in a number of test pilots to improve product delivery and reduce out-of-stock items. It has since grown beyond the grocery market to other industries. Many of the challenges facing supermarket chains like Wegmans, Kroger, and Safeway, also face the Defense Commissary Agency (DeCA), a chain of supermarkets, or commissaries, located on U.S. military installations. Yet, there is no evidence to indicate that DeCA has implemented any improvement efforts employing CPFR.

## **Specific Problem**

For years, DeCA has provided “quality goods at the lowest possible cost to authorized patrons” (DeCA, 2002: 2). Authorized patrons are limited to active and reserve members of the Armed Forces and their dependents to include those retired from military service. DeCA’s mission is to “ensure military readiness and retention of quality personnel by providing a part of the military compensation package” (DeCA, 2002: 2). The commissary privilege ranks towards the top of most military and retired members’ list of valued benefits. Therefore, DeCA strives to provide this valued benefit through savings on food purchases and household items (DeCA, 2002: 2).

While DeCA has succeeded admirably in its mission to the troops, the perception is its hands appear somewhat tied by antiquated electronic systems and business practices which make it difficult for DeCA to realize the flexibility and streamlined processes inherent in collaborative markets. Can DeCA’s goal of providing goods at the lowest possible cost be further improved?

## **Research Objective and Questions**

The primary objectives of this research are two-fold: to identify the current processes being used by DeCA and evaluate their adequacy in fully meeting their goal of quality goods at the lowest possible cost. Once these processes are identified, this research will look at the CPFR process and how it is being used in the grocery chain industry to see if further savings can be realized by DeCA if it were to adopt such a process. These savings, in turn, could then be passed on to DeCA’s patrons.

### Research Question

The focus of this research is to answer the question: Are there unique issues that the Defense Commissary Agency (DeCA) must consider before implementing the Collaborative Planning, Forecasting and Replenishment (CPFR) process?

### Investigative Questions

To answer the research question, this research will address the following investigative questions:

1. What process does DeCA currently implement with their suppliers?
2. How has implementing CPFR benefited comparable grocery store chains that implemented CPFR?
3. In what areas can DeCA realize performance improvements by adopting CPFR processes?
4. What strategies would prove effective in implementing CPFR in DeCA?

### **Limitations**

Limitations in application will ultimately be governed by the mandates imposed upon DeCA as a federal agency. It is this researcher's hope that these mandates are flexible enough to allow the methodology used in this research to be applicable. Other limitations will be the lack of data specific to the grocery industry, especially in cases where the access may be limited due to proprietary information, as well as availability of members with which to conduct interviews. Additional limitations may also be identified as research progresses.

The purpose of limiting this research to only the grocery industry and DeCA is because according to DeCA, the commissary privilege ranks towards the top of the

military members' most valued non-pay compensation benefits (2002: 2). Identifying possible improvement areas in planning, forecasting, and replenishment will help DeCA garner additional savings which will enhance their goal and provide further savings to those who value its service.

## **Summary and Preview**

This chapter started with the background and specific problem for this research. It then stated the objective of this research and outlined the research questions used to meet that objective. The chapter also listed possible limitations while conducting this research.

The remainder of this paper is divided into four chapters. Chapter II will provide a literature review concentrating in two areas. First, information covering CPFR in the grocery chain industry will be covered. Second, the literature review will focus on current business processes followed by DeCA.

Chapter III will give a detailed description of the methodology selected for this research, why it was chosen, and how data was gathered and analyzed.

Chapter IV presents results and an analysis of the data with emphasis on answering each of the four investigative questions.

This paper concludes in Chapter V with a discussion of the research question, the overall conclusion to that question, the research limitations actually faced during the study, and recommendations for future research.

## **II. Literature Review**

### **Chapter Overview**

This literature review provides an introduction to CPFR along with a formal definition of CPFR that will be used throughout this study. An overview is provided explaining the different facets of CPFR, and then the chapter focuses on CPFR in the grocery industry. Finally, this review concludes with the planning, forecasting, and replenishment processes used by DeCA.

### **Introduction**

In the 1970s, management theories focused on product life cycles and companies were organized around how products were designed, tested, manufactured, and distributed. These theories were turned into practice. The focus was on the product. In the 1980s, these companies realized customers determine the market and changed their focus to customer life cycles. Companies started looking at the transaction between buyer and seller and the long-term set of transactions that a given buyer will effect. Companies moved from “getting the order” to “serving the customers needs”. The hope being that the buyer would return to the same seller for more business. Yet, something was still missing. The focus was still one-directional. In the 1990s, the most innovative and visionary companies started to develop the relationship life cycle, CPFR (White, 2001: 1).



## **CPFR Defined**

There are several variations of CPFR's definition all of which focus on and agree with one common, consistent theme, collaboration or information sharing. CPFR is a process companies throughout the supply chain can use to help lower their costs and improve customer service. Companies that become partners in CPFR share their plans for future events, and then use an exception-based process to overcome any deviations in their plans (Syncra, 2001: 1). CPFR is a tool that helps trading partners facilitate collaborative forecasting throughout the supply chain.

Collaborating on issues in advance gives companies time to react to changes in the market promoting a win-win situation for the companies involved and provides lower prices and benefits for the consumer (Syncra, 2001: 1). For consistency throughout this paper, the description of CPFR provided by Voluntary Interindustry Commerce Standards (VICS) will be used:

“Collaborative Planning, Forecasting and Replenishment (CPFR) is a business practice that combines the intelligence of multiple trading partners in the planning and fulfillment of customer demand. CPFR links sales and marketing best practices, such as category management, to supply chain planning and execution processes to increase availability while reducing inventory, transportation and logistics costs.” (VICS, 2004a, p. 5)

Before proceeding further, it is important to note what collaboration is and what collaboration is not. Collaboration is real-time, global, secure, and simultaneous communication synchronized to eliminate barriers between trading partners (White, 1999: 7). Collaboration can be two-way or multi-way (referred to as n-tier) between trading partners. White states that collaboration is not just being connected on the

internet. Although the internet provides real-time, global information, it is not necessarily secure nor does it necessarily allow companies to synchronize that information to eliminate barriers. The internet provides transactions that are primarily one way, customer orders. The customer places an order over the internet instead of in the store. There is no collaboration between trading partners since neither the nature of the relationship or transaction is changed. Finally, collaboration is not doing what you do now, with self-service nor is it what you do now, only faster. Processing orders faster does not eliminate barriers and it does not allow time to plan for the most effective way for supply to meet demand (1999: 3-5).

As you can see, collaboration is the key to CPFR. Collaboration is where trading partners can change a transaction and their relationship. True collaboration is where trading partners: derive the information needed, such as forecasts, plans, and orders, together; approve of the information shared; use the information to execute their plans; measure one another's performance as it relates to the plan; and, pay themselves (share the profits) from what they've earned based on their performance (White, 2001: 3).

### **Theory behind CPFR**

Collaboration is not new. Businesses have been sharing information for centuries; however, they have always guarded certain aspects of their business plans and processes when dealing with their business partners. Early on, the shrewd businessman learned that information is power. Having information, or knowledge, about future commodities allowed a businessman to trump his or her competitors and hopefully, guarantee future

success. Today's business environment is not much different. Many businesses still subscribe to the "I've succeeded, now you figure out how to succeed" (Bruce and Ireland, 2002: 8) mentality, even when they are supposedly collaborating with their closest trading partners.

Many companies say they are practicing collaboration, and in truth, they are. But there is more, it is not enough to just share information, especially if it is selective sharing. CPFR, as previously described, espouses complete sharing between trading partners to realize the full benefits of the CPFR process whether practiced in full or in part. McCarthy and Golicic point out that relationships must evolve from the traditional, adversarial, and self-serving to one characterized by information sharing and cooperation towards a common goal while keeping a focus on the end-user, the consumer (2002: 434).

In fact, VICS met earlier this year to refine the original "nine steps" of CPFR to a set of "eight collaboration tasks." These tasks are easier to understand but are more comprehensive than the original model. Companies now have greater flexibility when selecting the sequence of their collaboration tasks so they can better focus their initiatives (VICS, 2004a: 22). The new tasks allow companies to focus on just a subset of the four activities outlined in the CPFR model providing for a partial implementation of the CPFR model. The rest of the companies' processes would be performed through conventional business processes. These partial implementations are also known as "CPFR Lite" (VICS, 2004a: 7). The VICS CPFR model is included in Appendix A.

Despite the change from nine steps to eight tasks, the underlying principles of CPFR still remain the same and the basics are straightforward (Schwarz, 2004: 26).

Though CPFR had its beginning in 1995, the VICS committee formally established CPFR in 1998 to help companies co-manage processes and share information (Schwarz, 2004: 25). Partners, buyers and sellers, identify joint strategies and tactics in detail as well as share information about demand; significant differences between the buyer's and seller's demand forecasts, called exceptions, are discussed and resolved; the buyer and supplier share plans for orders needed to fill requirements based on the shared demand forecasts; orders are placed; and, mutually agreed upon performance measures are adopted and tracked (Schwarz, 2004: 26). In addition, Schwarz mentions to be truly successful, it has been suggested that CPFR must include all parts of the supply chain. This process is a further extension of CPFR and is called "n-Tier collaboration" where the retailer collaborates with its manufacturers and the manufacturers, in-turn, collaborate with their suppliers to determine what plans are needed to supply and order products (2004: 28). All partners from the retailer to the supplier have access to the plan and to the forecast allowing the retailer visibility of any possible shipment delays as well as allowing the manufacturer visibility of the retailer's shelf status. This access provides the retailer and manufacturer valuable time in making adjustments for promotions as well as day-to-day sales.

Many companies have benefited by implementing the CPFR model; however, despite its relatively benign appearance at first glance, the CPFR process harbors several barriers that have prevented it from being the dominant business application of choice. Before addressing these barriers, it is important to first list the benefits realized, both projected and actual, experienced with CPFR implementation.

*Benefits of the CPFR Process:*

- “Builds business alliances focused on jointly managed processes” and “promotes a common execution tool that links the enterprise” (Ireland and Bruce, 2000: 83). It improves efficiencies which lead to increased responsiveness reducing lead time/cycle time (production cycles are smoothed)
- “Results in a single, mutually owned, consumer-driven forecast” (Ireland and Bruce, 2000: 83) which aids in increasing forecast accuracy
- “Links consumer demand with supply planning and execution” (Ireland and Bruce, 2000: 83) to increase product availability (reduced inventories and improved in-stock items, reduced stock-outs)
- Forces companies to examine and define their operating processes
- “Lays the foundation for business processes and technology” (Ireland and Bruce, 2000: 83), creating an environment that facilitates other collaborative applications
- Optimized inventory levels and associated costs that help assure increased revenues and earnings (sales increase)
- Increases items in-stock on the shelf
- Reduces operating expenses, account receivables, and the cost of goods

(Ireland and Bruce, 2000: 83; McCarthy and Golicic, 2002: 434; JDEdwards, 2003: 4).

*Barriers to the CPFR Process:*

- “Adequate technology and software for some companies that allows real-time information exchange” (McCarthy and Golicic, 2002: 432) -- in the past, “technology constraints have prevented collaborated forecasts to be automatically fed into manufacturers’ planning and execution systems” Bruce and Ireland, 2002: 8)
- “Substantial investment in time and personnel” (McCarthy and Golicic, 2002: 432) -- training is essential, especially within the organization. Internal processes need to be defined and internal turf wars need to vanish for CPFR to flourish
- Intensive process of maintaining collaborative efforts with suppliers and products (McCarthy and Golicic, 2002: 432)

- Lack of trust between trading partners -- partners must develop trust between one another. Each must treat the other fairly and honestly (Schwarz, 2004: 28)
- Perception – Bruce and Ireland state that attitudes, fear of change, and old traditional cultures stall progress (2002: 8). “Individual functional managers can be seen as barons of their own territories and the organization as a union of kingdoms or silos” (Skjoett-Larsen et al, 2003: 546). Without proper communication, employees will fail to understand the purpose of, or the advantages of, CPFR (Skjoett-Larsen et al, 2003: 546)

(Bruce and Ireland, 2002: 8; McCarthy and Golicic, 2002: 432; Schwarz, 2004: 28; Skjoett-Larsen, et al, 2003: 546).

According to Baird, pilot studies have confirmed the benefits of implementing CPFR, yet CPFR has not moved past a limited number of product categories or a small set of trading partners. CPFR has typically been stopped after the pilot stage because trading partners have not found a way to continue the CPFR process without adding the required number of personnel to support the manual processes. One of the challenges appears to lie with the replenishment portion of CPFR (2003: 14). “In one customer-supplier relationship, it took 50 man-weeks to manage a CPFR process around a four-week rolling forecast. This was not a process that either company could take to other trading partners.” (Baird, 2003: 14).

Synchronizing information between trading partners is the key. But without the ability to automatically monitor process execution, compare that execution against the plan, and quickly and correctly identify exceptions, achieving this synchronization will continue to require more manpower than trading partners can afford (Baird, 2003: 14). In addition, CPFR applications are relatively new and few businesses have in-depth experience of the CPFR work process as it pertains to multiple trading partners. To help alleviate this challenge, CPFR software continues to evolve through companies such as

Syncra Systems, Logility, Manugistics, and i2 Technologies to chip away at the limitations in synchronizing data and applications (Lord, 2001: n pg; Dion, 2000: 2-3).

Even when this automation becomes reality, putting CPFR technology into action will be perceived as unreachable for many companies due to the data processing and network software systems required. However, Syncra states that CPFR technology does not have to be installed at each trading partner's location. With the internet, it can be installed at only one location offering several companies hosting services that run CPFR solutions for the entire trading partner community. Under this installation scenario, the cost to those companies participating will be substantially less than if they were to install their own systems (2001: 3).

Despite the information technology challenges that companies face, technology is not what makes CPFR work, in fact, technology is the easy part. The CPFR process is what is hard because it is the company's strategic business process supported by its internal environment that makes CPFR successful. Trading partners need to change their internal processes so they align with their demand plan and forecasts (Harrington, 2003: 52). Technology is a tangible barrier; the intangible barriers are what really make CPFR a challenge.

### **CPFR in the Grocery Industry**

In the fall of 2001, the Grocery Manufacturers of America (GMA) commissioned KJR Consulting to conduct a baseline study of the extent of CPFR use among GMA's members (KJR, 2002: xi). One-third of GMA's food and non-food membership

responded to the study representing an excellent cross-section of member companies. Of that one-third, 35 percent indicated CPFR alliances with grocery retailers (KJR, 2002: v-vi). The rate at which the GMA community is implementing CPFR has been conservative. Some of the reasons given for such slow adoption of this process since its inception in 1995 include: taking time out to deal with the technological issues of the Y2K bug; the XML communications standard was only recently released; the B2B exchanges did not come into existence until 2000 and are only now starting to establish CPFR capabilities; and, companies are not releasing information citing concerns about sharing critical company strategies with competitors (KJR, 2002: vi).

KJR pointed out that those respondents with more experience using the CPFR process have noted that it is not an easy, plug-and-play initiative. CPFR is not a lock-step approach for business processes due to the collaboration involved. Variation in a trading partner's vision, capabilities, and willingness to share information is different with each CPFR experience (2002: vi). Respondents also noted they were still trying to figure out optimal uses for their CPFR resources (KJR, 2002: viii). So it appears for the near term, at least, until the business climate and culture change, CPFR will not become the dominant tool of choice. It will continue to be perceived as a tool that provides too little return on investment for the effort involved to make it work. Trading partners will continue to use their own individual collaboration, planning, forecasting, and replenishment methods.

Despite these reasons, respondents in the KJR study did reveal enthusiasm over the many anticipated benefits inherent with CPFR implementation. Many of these benefits are the same as or similar to those already mentioned but will be mentioned here



again: improved forecast accuracy, decreased inventory, enhanced relationships, better partner communication, better internal communication, increased sales, reduced stock-outs, improved service levels, improved asset use, better deployment of organizational resources, better insight to partners' needs and priorities, and better decision making capabilities. Those companies with the greatest CPFR experience stated that they intended to use the CPFR initiative carefully and strategically. They do not intend to use it with every trading partner nor with every product (2002: vii).

As stated earlier, the CPFR initiative began in 1995 with Wal-Mart. They conducted a CPFR pilot study with Warner-Lambert Company, now Pfizer, to see how this new process would work with Listerine. By 1998, the consumer goods industry became aware of CPFR's potential and by 1999 the media was playing up the rewards documented in pilot studies conducted by Wegmans and Nabisco, Wal-Mart and Sara Lee, and K-Mart and Kimberly-Clark. These case studies highlighted the huge advantages offered through the use of CPFR and implied easy implementation (KJR, 2002: 9).

For example, the CPFR pilot between Wegmans and Nabisco was successful in increasing private label nut sales by 16.3 percent compared to the rest of the market, which declined during the same period by 7.2 percent. Sales of Nabisco's Planters nuts increased to 53.9 percent while the rest of the market fell 9.4 percent. Moreover, during the pilot, retail service levels went up four percent from 93 to 97 percent and inventory on hand was cut to 2.5 days, an 18 percent decrease (Reda, 2000: 2). Wegmans is updating its information technology, software, and processes before taking another look at CPFR (Timmons, 2004). And Kroger supermarkets are currently in various stages of

collaboration pilot studies (Sonon, 2004). However, because of the proprietary nature of their business strategies, they are keeping a close hold on their information until they have conducted their study.

Currently, most retailers are focusing their CPFR studies at non-perishable products so they can gain some expertise with the process before risking expansion to higher risk, higher margin type products. Wal-Mart was one of the first retailers to try a pilot study with fresh produce. To make their pilot work, Wal-Mart had to convince its trading partners (Chiquita, CHRobinson, Fresh Express, and Martori Brothers) to think and conduct business differently. On the supplier side of the supply chain, Del Monte approached its retailer relationships through collaborative transportation management by looking for back-haul opportunities when delivering high volume products. Furthermore, Del Monte is developing regional processing facilities to fill e-commerce sales to both retailers and wholesalers faster than in the past (Perishables in Supermarkets, 2001: 8). So, how does DeCA fit into the grocery industry and what process does DeCA follow to meet their customers' grocery needs?

### **DeCA Process**

As stated in the Supermarket Strategic Alert Special Report, dated 2002, DeCA was ranked 14<sup>th</sup> when compared with the 25 largest supermarkets in the United States. In 2000, DeCA had 190 stores with sales of \$3,607 million (11).

A commissary is very similar to a supermarket and primarily sells food products and some household items such as paper towels, batteries, pet supplies, and cleaning

supplies. One difference between commissaries and commercial supermarkets is that commodities and products sold in the commissaries are restricted to those items authorized by the U.S. Congress. Its resale focus includes both brand name and non-brand name products. Non-brand name items include meat, eggs, and in-store resale operations like the deli and bakery (DeCA, 2002: 2).

The commissary's contract philosophy is to provide the best value to its patrons. Like all federal agencies, the commissary is guided by public law which mandates that it allow a fair proportion of its contracts be made with small businesses, small disadvantaged businesses, HUBzone small business, veteran owned small business, and women owned businesses. In addition, as a government activity, commissary personnel are required to follow stricter standards than what are normally accepted in the commercial grocery industry (DeCA, 2002: 3).

The Department of Defense has endorsed using the Central Contractor Registration (CCR) as the single government repository for contractor data. The CCR stores business profiles, capabilities, and financial data for every government contractor, regardless of electronic capability. To receive consideration on future solicitations, awards, and payment with the federal government, each contractor must register with the CCR. The commissary's approach is to use electronic data interchange (EDI) techniques as much as possible and they expect many of their suppliers to develop the capability to receive orders, submit invoices, or receive payments electronically as well (DeCA, 2002: 4).

Before a brand name product is selected for resale in the commissary, the product must have a universal product code (UPC) and be sold in commercial supermarkets.

Once on the shelf, the product's performance determines whether it remains in stock. As long as sales trends indicate the product is moving, replenishment quantities will be ordered. If sales trends indicate the product is not moving, the product will be phased out and deleted from stock. Products for national distribution are normally presented to buyers at the commissary's headquarters in Fort Lee, VA. Products with regional or local distribution may be presented at one of the regional offices (DeCA, 2002: 6). According to Mr. Ken Patterson at DeCA headquarters, DeCA contracts with vendors for most of the products sold in the commissary, then the vendors ship their orders to distribution centers which are also used by other supermarket chains, and the distribution centers ship products to the individual commissaries based on their orders (2004).

## **Chapter Summary**

CPFR is a dynamic concept that is relatively new to the business world despite the fact that each individual part has been around for a long time. In this chapter, the CPFR process was discussed. Particular attention was devoted to the theory behind CPFR and the benefits different organizations expected to reap after implementing CPFR. The chapter concluded with a summary of DeCA's current business process. The interest in CPFR stems from the business world's continuous pursuit of a better way to meet forecasting and replenishment demands. This research will utilize the CPFR model as described by VICS to help determine if DeCA can indeed benefit by implementing either all or some of its eight tasks.

### **III. Methodology**

#### **Chapter Overview**

This chapter presents the technique utilized to satisfy the research objectives described in Chapter I. It specifies the different methods used to answer each of the investigative questions previously described. Furthermore, various techniques of qualitative analysis as they apply to this research are reviewed. Finally, validity of the overall study is discussed.

#### **Introduction**

The research methodology used to answer the investigative questions discussed in Chapter I is a case study about the CPFR process and the DeCA process. The results of this review, presented in Chapter II, answered the first and second investigative questions and will be used to complete the rest of this research. This research also incorporated personal, telephone, and electronic informal interviews at the corporate, regional, and zone level of the grocery industry. Interview analysis will reinforce the case study data already accomplished, help clarify questions that arise during initial data gathering, and provide information regarding current or planned planning, forecasting, and replenishment processes. The results from these interviews, along with the information gathered in Chapter II, will be used to help answer the last two questions of this study. Chapter II presented a CPFR theory and method that has been used by industry in an

effort to improve forecasting and replenishment while decreasing inventory through effective strategic corporate planning. This chapter provides a discussion of the case study and field study used during this research.

### **Case Study Analysis**

The DeCA business model and the VICS CPFR model will be analyzed for overall content. The models will be analyzed to answer investigative questions one and two respectively. The analysis of these models will attempt to build a framework for DeCA's current process with its suppliers as well as provide a clear understanding of CPFR and how it applies to the grocery industry. The analysis of these models will also determine if the processes outlined contain a CPFR strategy conducive for use within the DeCA organization. The results of this analysis will be used to answer investigative questions three and four.

### **Field Study Analysis**

Informal interviews will be used primarily to clarify questions that arise during the literature review and to validate the information gathered. Personal interviews are the best means of gathering the data required; however, due to time constraints some interviews will be conducted via telephone or through electronic means. Time limitations also eliminate observation as a primary means of gathering data; therefore, where possible, some observation will be conducted in a limited local DeCA commissary environment to enhance and corroborate the data gathered through the informal interview

process. Because of the qualitative nature of this study, sampling techniques and quantitative computational methods will not be required. The population for this study will be DeCA stores within the continental United States and the Kroger, Wegmans, and Safeway grocery store chains. No set of standard questions will be developed to ask each person interviewed other than the core interview questions mentioned below.

Due to the simple, informal nature of the interviews, some questions will vary depending upon the level of CPFR process application at the store or supermarket chain where the person will be interviewed. However, there will be a separate core set of interview questions that will be presented to the supermarkets that have implemented CPFR and to DeCA. These core interview questions are outlined below and are presented in more detail in Appendix B:

*DeCA Core Interview Questions*

1. How does DeCA share forecast information with their suppliers?
2. How does DeCA conduct their replenishment operations with their suppliers?
3. How does DeCA share planning information with their suppliers?

*Supermarket Core Interview Questions*

1. How has implementing CPFR impacted product availability?
2. How has implementing CPFR affected the suppliers cost to deliver?
3. How has implementing CPFR affected sales growth?
4. How has implementing CPFR impacted planning systems?
5. How has implementing CPFR impacted the customer?

Interviews will primarily be conducted one-on-one in person, by telephone, or via e-mail but may be conducted with the aid of this researcher's advisor. In each interview,

the individual will be asked if their name can be used as a source for this study. If permission is denied, that individual will be assigned a control number associated with their grocery store chain. Hopefully, this will elicit the most honest responses possible.

The core interview questions asked at DeCA will be used to verify their current business processes and to better understand their current business strategy. The core interview questions asked at the supermarkets that are already using or have already used CPFR will be used not only to verify their current processes and better understand their current business strategy, but also to determine if those same type CPFR processes can be used with the same benefits in the DeCA environment.

Tape recordings of interviews will not be used; however, notes will be taken for later evaluation and cross-referencing against gathered case study data. If differences exist between interview and case study data, they will be objectively explained in Chapter IV of this study.

## **Validity of this Research**

### *Internal Validity*

Internal validity is the extent to which a research study's design and data allow the researcher to draw accurate conclusions (Leedy and Ormrod, 2001: 103). Leedy and Ormrod discuss several strategies a researcher can use to increase the probability that the explanations presented are as accurate as possible based on the observations made (2001: 105-106). In addition, Merriam and Simpson point out five strategies a researcher can



use to improve internal validity (1995: 102). Leedy and Ormrod also list several strategies (2001: 105, 106). Four of these strategies will be used to validate this research.

The primary strategy used for this research will be triangulation. Leedy and Ormrod (2001) describe triangulation as the process of collecting multiple sources of data in the hope that they will converge to support a hypothesis or answer a question (105). Multiple data sources will include published and unpublished written material and interview responses.

The second strategy used will include respondent validation or member checks. To accomplish respondent validation, data interpretations will be provided back to the interviewees to ensure the results and findings are credible (Leedy and Ormrod, 2001: 106; Merriam and Simpson, 1995: 102). This will be done towards the end of this research to help guarantee the interpreted data's accuracy and the research conclusions are correct; however, because of interviewee schedules, interpretations may not be able to be verified by all interviewees.

The third strategy used will be feedback from others or peer examination. Peer opinion will be solicited to determine whether they agree or disagree with this researcher's interpretations and if they believe this researcher has drawn valid conclusions from the data (Leedy and Ormrod, 2001: 106; Merriam and Simpson, 1995: 102).

Finally, internal biases will be identified (Merriam and Simpson, 1995: 102). It will be important to keep opinion out of the interview process, both from the interviewer and interviewee. In addition, there is a need to keep the definition of CPFR consistent from one individual to another. Both will be necessary to allow for an objective

interpretation of the data gathered. Furthermore, this researcher will strive to interpret the secondary data as objectively as possible while minimizing any biases inherent at the beginning of this study.

### *External Validity*

According to Leedy and Ormrod (2001), external validity is the extent to which the conclusions drawn in a research study can be generalized to other situations (105). Leedy and Ormrod present three strategies to enhance external validity: a real life setting, a representative sample, and replication in a different context (2001: 105-106). The purpose of this study is to determine if the information gathered concerning the CPFR process will apply to DeCA; therefore, the strategy used in this research to enhance external validity will be replication in a different context. The CPFR process has already been implemented at several supermarket chains in the grocery industry as pointed out in Chapter II. Based on the data collected through case study analysis and interviews, this researcher will attempt to show the CPFR process can be implemented at DeCA as well with the same benefits.

It will also be necessary to identify external bias. The interview environment will need to be such that the interviewee is comfortable enough to provide candid, honest, and unbiased responses. Also, during the interview, the interviewer will need to be cognizant of filtered information from the interviewee. Filtered information may be a result of the interviewee not being comfortable with the questions or answers provided, or it may be due to proprietary information that particular company may not want released.

## **Chapter Summary**

This chapter has provided the methodology to accomplish the research objectives presented in Chapter I. It also defined the methods used to answer each of the four investigative questions as well as described the various qualitative analysis techniques as they apply to this research. The chapter ended with an explanation of the internal and external validity strategies that will be used throughout this research. The following chapter will describe the research results.

## **IV. Results and Analysis**

### **Chapter Overview**

This chapter discusses the sampling technique used in selecting the different commercial supermarket chains as well as the various issues that were encountered during this research study. In addition, this chapter will answer the investigative questions using data gathered from the literature review as well as data gathered through the interview process.

### **Introduction**

As mentioned in Chapter III, DeCA was contacted for interviews at the local, zone, and regional levels. Three supermarket chains were also contacted for interviews: Kroger, Wegmans, and Safeway. All three supermarkets have implemented varying degrees of the CPFR model in several CPFR pilot studies with one or more of their manufacturers within the past eight years. These three supermarket chains were objectively and randomly selected through non-probability sampling.

According to Leedy and Ormrod (2001), in non-probability sampling, the researcher has no way of guaranteeing each element of the population will be sampled (218). Leedy and Ormond further point out three types of non-probability sampling: convenience sampling, quota sampling, and purposive sampling (2001: 218-219). In this study, the researcher used purposive sampling by selecting the first three, largest

supermarket chains identified as having implemented CPFR during the data gathering process. Leedy and Ormrod define purposive sampling as: “In purposive sampling, people or other units are chosen, as the name implies, for a particular purpose.” (2001: 219). Using this sampling method, there was no way of knowing whether there would be a good cross reference of supermarkets represented. Subject matter expert interview responses for the first two investigative questions follow. Additional data gathered during the research will also be included.

Although each of the interviews conducted were with subject matter experts from grocery industry companies on the leading edge of the CPFR process, the interview responses are a blend of primary and secondary data based on an interviewee’s experience, knowledge, or both. In addition, each interview response was subjective. In an effort to increase reliability, each interviewee was asked the same questions; however, validity was diminished due to filtered, or no, information from the supermarket chains.

### **Investigative Question One**

*What process does DeCA currently implement with their suppliers?*

DeCA defines its suppliers as its distributors and DeCA uses some of the same distributors (i.e. Nasch Finch, SuperValue, etc.) that commercial grocery store chains use. Many of DeCA’s distributors and warehouses exclusively support DeCA (Madar, 2004). Furthermore, DeCA does not deal directly with the manufacturer (i.e. Nabisco, Proctor & Gamble, etc.) other than to agree on a contract. Once a contract is agreed upon, DeCA deals directly with the distributor and trusts the distributor to work with the manufacturer (Long, 2004).

DeCA uses a process called Computer Assisted Ordering (CAO) once a contract between DeCA, the vendor, and the distribution center is made. CAO is an automated interface that automatically calculates forecasting and replenishment requirements (Long, 2004). Because planning, forecasting, and replenishment are all accomplished through, and integral to, the CAO automated system, it was not deemed appropriate to answer each of DeCA's core interview questions presented in Chapter III separately.

DeCA's approach to consumer satisfaction is through improved replenishment. DeCA wanted an automated system that would positively impact operations, reduce costs, decrease inventory by helping them improve inventory management, and improve customer service. They wanted a system that could help them forecast what they were anticipating to sell on any given day based on past sales history. The algorithm used in CAO helps them do just that. It forecasts sales versus replenishing products on a one-to-one replacement basis (Day and Jones, 2002: 5). The algorithm will forecast what is needed for a particular day based on historical sales. For example, to order items needed for Tuesday, the CAO algorithm will forecast Tuesday's replenishments based on the last year's sales history for every Tuesday. The algorithm takes into account paydays, promotions, and other events that may impact sales on that day. In this way, CAO computes replenishment requirements for an entire week (Long, 2004). For this process to work effectively, two things are required. First, each commissary has to ensure they have accurate sales history data. Second, each commissary must have an accurate perpetual inventory for their balance on hand (Patterson, 2004).

CAO is a result of DeCA's strategic initiative to automate and improve store replenishment operations. They feel that having the right items in the right quantities at

the right times will equate to increased customer satisfaction as well as increased sales.

Put simply:

“CAO is an automated order forecasting and generation system that utilizes historical sales data, limited human intervention and seeks to achieve Just-In-Time (JIT) inventory management.” (Day and Jones, 2002: 5).

CAO calculated replenishment orders do not fill the shelves completely; it forecasts orders based on the level of business on slower days during the week to result in less than fully packed shelves towards the end of the week (Day and Jones, 2002: 5).

The CAO system automatically generates store replenishment orders for electronic transmittal to the DeCA Interactive Business System (DIBS) with minimal intervention from store personnel. The order is then transmitted to the appropriate supplier as an Electronic Data Interface (EDI) transaction. The order is based on each individual store's balance-on-hand, supplier delivery lead times, point of sale consumption, and future sales projections. CAO does not work every item in the store's system every day. CAO is designed to work items by exception (Day and Jones, 2002: 5-6). For CAO to work effectively and contribute to the current strategy's success, there must be continuous communication between the store director, retail managers and CAO specialists (Day and Jones, 2002: 7).

Long described CAO as an internal program used only by DeCA so the distributor does not have access to the system. Individual commissaries within DeCA transmit their orders automatically through CAO to the distributor via an EDI 875 purchase order. The distributor then prints out the order or uses whatever electronic software they have to read the order and transmits an EDI 856 back to the commissary that submitted the order to confirm order receipt. If a commissary notices a not in stock (NIS) item, it will call the

appropriate distributor to ascertain why. If the item is showing in the distributor's data system as "manufacture short," then the commissary trusts the distributor to notify the manufacturer to correct the NIS condition. Information available to the commissary is limited to what the distributor can provide them from their computer screen until the distributor is able to make contact with the manufacturer (2004).

DeCA does provide many vendor managed inventory items (i.e. drinks such as soda, water, juice; chips; and breads to name a few). These items are stored in the commissaries direct store delivery area and are delivered and stocked by the vendor. If commissary personnel notice an item getting low or NIS, the commissary notifies the vendor directly and the item is delivered and stocked (Long, 2004).

DeCA currently uses an EDI transaction process with their suppliers. Internally, DeCA uses an automated process they call CAO. CAO automatically generates store replenishment orders which are transmitted electronically to DIBS. Orders are then transmitted to, and confirmed by, the appropriate supplier as an EDI transaction. If a commissary notices an NIS item, it calls the appropriate distributor who either ships additional merchandise or calls the manufacturer to order additional items so the NIS condition can be corrected. In addition, the commissary also carries vendor managed inventory items.

## **Investigative Question Two**

*How has implementing CPFR benefited comparable grocery store chains that implemented CPFR?*



CPFR is still in its infancy in the commercial grocery industry. Those supermarkets that have implemented CPFR have done so as pilot studies to see how this relatively new process would benefit their overall corporate strategy. The best known and most documented of the supermarket pilot studies is the Wegmans and Nabisco study mentioned in Chapter II. Pilot studies for the other commercial supermarket chains mentioned are not as well documented or as readily available in literature. An attempt was made to conduct interviews with each of the three supermarket chains mentioned in the introduction of this chapter with mixed and disappointing results. When Wegmans was contacted, they were kind enough to forward the CPFR slides they used in training their employees about CPFR; however, they did not want to share any information on their new CPFR pilot study for proprietary and competitor reasons. Likewise, when Kroger was contacted they too declined to comment on their CPFR processes for the same reason as was provided by Wegmans. After contacting Safeway, they provided the name, number, and e-mail address of the person to speak with; however, that person would not respond to any form of communication. These responses made it very difficult, if not impossible, to objectively answer the supermarket interview questions mentioned in Chapter III. Therefore, this study will focus on the Wegmans and Nabisco pilot to help answer this investigative question.

Nabisco is a major manufacturer of biscuits, snacks, and premium grocery products in the United States, Canada, and in more than 85 other countries. Wegmans Food Market, Inc. is a supermarket chain in Pennsylvania, New York, and New Jersey and is recognized as an industry leader and innovator (VICS, 1999: 33).

Nabisco and Wegmans wanted to validate the CPFR model so they could see if the model was applicable to their other business and trading partners. Their goal was simply to test the CPFR concept and processes (VICS, 1999: 34). Their test was limited to 22 Planters nut items (VICS, 1999: 33). Their joint business planning process had to be done twice during the initial phase of the pilot and their sales forecast was developed simultaneously with their business plan (VICS, 1999: 35). Both companies were already using an 852 EDI transaction set with Microsoft Excel spreadsheets and e-mail so they were able to communicate forecasts, plan changes and exception items, and measure their results right from the start of their study (VICS, 1999: 36). This pilot fared well despite the use of limited technology. Since this pilot study, software developed specifically for CPFR applications has been developed and is still being tweaked and refined so it can fit the nuances of each individual company.

For example, according to VICS, during phase two of the study which not only included Planters nuts but also Milk-Bone pet snack items, Nabisco and Wegmans were able to use either Microsoft Internet Explorer 4.0 or Netscape Navigator with a Java client residing on their local workstation and an Oracle database and Java application residing on a remote server. Access was made through the local Java client which then connected through the internet to the remote server. The remote server is located at Manugistics in Maryland. After the data entered the client and was transmitted to the server, both partners were able to view, compare, and manipulate the data (1999: 36).

Like any new initiative, this initial study required a reallocation of priorities and time for those involved. Both companies assembled teams with personnel from sales, category management, supply chain management, information systems, and customer

service. They also had executive sponsorship. During the initial phase, both companies had several challenges to initiating the pilot successfully (VICS, 1999: 40). These challenges were similar to the barriers discussed in Chapter II. The challenges faced by Nabisco and Wegmans follow:

1. “Participants had to gain a basic understanding of CPFR.
2. Process maps developed by VICS had to be translated into the current workflow, or new ones had to be created at each company.
3. Major obstacles due to systems limitations had to be overcome.
4. Item-level forecast had to be manually developed, since neither Wegmans nor Nabisco forecasting systems could adequately perform this task.
5. Collaboration software was not available until phase two of the pilot.” (VICS, 1999, p. 40)

To overcome these challenges, the two partners established a methodology that included: training and educating their employees, preparing their joint business plan, generating their sales and order forecasts, and finally, executing their shipments (VICS, 1999: 40).

Actual results for this pilot will be restated here for convenience. They included: an increase in category nut sales by 16.3 percent versus a 7.2 percent decline for other retailers in the market; sales increases for the Planters brand were 53.9 percent as measured by Information Resources, Inc. for the 30 weeks of the study, service levels to the stores increased from 93 percent to 97 percent, and the days of inventory decreased by 2.5 days or 18 percent (Reda, 2000: 2). Overall, the pilot study was deemed a success by both partners. It provided a better planning process and improved their understanding of each others’ marketing plans. It also proved to each trading partner that collaboratively monitoring and adjusting business plans can lead to improved supply chain performance and profitability (VICS, 1999: 33; KJR, 2002: 9-10).

Because of the difficulty encountered in obtaining information during the interview process, it was somewhat difficult to evaluate the benefits realized by comparable grocery store chains that have implemented CPFR. However, relying on the well documented Wegmans and Nabisco pilot study conducted, and the fact that other supermarket chains as well as superstores like Wal-Mart are exploring CPFR's benefits with their own studies, it can be surmised that CPFR has provided a positive benefit with reduced costs, increased sales, improved forecasting, and reduced inventory.

### **Investigative Question Three**

*In what areas can DeCA realize performance improvements by adopting CPFR processes?*

CPFR's goal is to automate and improve sales forecasting and replenishment between trading partners throughout their supply chain. For this process to succeed, trading partners must develop trust in each other and ensure their internal processes are well defined and operating smoothly. DeCA, for their part, has already accomplished part of this process. They trust their distributors and their vendors; they have an EDI based automated forecasting and replenishment system, CAO; and they have flexible, trained employees that communicate and help keep DeCA running smoothly.

DeCA does provide its products at cost plus one percent. The cost is the best negotiated price from the manufacturer via DeCA's marketing business unit at DeCA headquarters at Fort Lee, Virginia. And that one percent is used to cover such things as waste, pilferage, and out of date or damaged items (Long, 2004). Based on such

negotiated prices, any cost savings that DeCA realizes, if any, would probably come from areas other than the items sold.

Areas that DeCA might be able to realize performance improvements include inventory and transportation. DeCA does not look beyond their distributor in the supply chain as pointed out in Chapter IV so they have no electronic visibility or information from their manufacturers concerning items they sell. Therefore, there is no electronic visibility or information from the manufacturer through the distributor to the commissary as the retailer. Hence, there is no collaboration. Responses to NIS items and low shelf stock items are reactive, not proactive.

An automated system which provides visibility between trading partners would allow each commissary to see if the manufacturer and distributor can support upcoming promotions. It would also allow the commissary to see if everyday item inventories are low at the distributor or if those items are even being produced in sufficient quantities at the manufacturer to support future needs. If not, collaboration between the commissary, the distributor, and the manufacturer would proactively resolve this type of issue. In turn, the distributor and manufacturer could see if shelf levels are low at the commissary and proactively produce and stock those low shelf level items. The distributor or manufacturer could also notify the commissary if it appears someone has overlooked that low shelf level item.

Based on the success of previous pilot studies found during this research, both in and outside of the grocery industry, and keeping in mind that you very seldom hear about the pilot study failures and the fact that CPFR is not for every organization, this researcher believes that DeCA, as well as its patrons, could realize benefits from even a

limited CPFR pilot study; one that might only include a distributor and one zone of commissaries which is about 12 retail stores. Implementing an automated system and instituting a collaborative relationship between partners could help DeCA realize reduced inventories, not only at their commissaries, but also at the distributor and manufacturer. The reduced inventories at the distributor and manufacturer would save costs at their locations and foster an even better working relationship with DeCA. In addition, collaboration and coordination could also reduce uncertainty and provide visibility of demand forecasts throughout their supply chain.

The second area where DeCA might realize an improvement is in transportation. An automated system would give all partners real-time visibility of those items needing pick-up or delivery, whether from the manufacturer or the distributor. This second area could lead to collaborative transportation management (CTM) between DeCA and its partners. However, even if DeCA did not implement CTM, it would be easier for the manufacturer and distributor to plan for full truckloads further reducing those associated costs included in the item's negotiated price.

This process should lead to cost savings on the items selected even during a limited pilot study. Minute cost savings multiplied throughout the DeCA network would result in significant cost savings, for DeCA and for its patrons. Delving into the costs associated with current DeCA and distributor contracts and comparing those costs with projected cost savings using the CPFR process is beyond the scope of this research effort. However, such costs should be explored in the future.

It is important to note that DeCA is federally subsidized, cost-based. This model recovers the cost of goods sold plus one percent (and a five percent surcharge to cover

facilities costs) at the register. All other overhead costs, including operational costs, wages, salaries and benefits, are funded through appropriated tax dollars. This differs from the commercial grocery supermarket's profit model where all costs, to include a profit, must be recovered at the register. According to Webb, DeCA strives to sell goods at the lowest possible cost while earning enough profit to cover its overhead, waste, pilferage, and out of date or damaged items while operating within their federal guidelines. Overhead costs include facilities, utilities, water, office supplies, information technology equipment, etc. Furthermore, as a federal agency, DeCA receives appropriations from Congress to purchase groceries and pay qualified civilian and contract employees. DeCA, after sales, does reimburse the grocery fund provided by Congress. In addition, every two weeks, all of the daily invoices are rolled up into one and paid to the manufacturer who in-turn pays the distributor. When DeCA contracts for goods through the manufacturer, the agreed upon purchase price includes the distributor's costs and transportation costs. Throughout the contract, DeCA coordinates with the distributor to ensure transportation efficiencies with full truckload deliveries (2004). Because of DeCA's appropriations from Congress and their already low prices, significant performance improvements may be hard to obtain, if at all (without revising their organization and business processes).

In contrast, commercial grocery supermarkets purchase goods at the lowest cost, but sell those goods at the highest price the market will bear since competition often leads to "lowest price" offerings. While commercial grocery supermarkets also make a profit to cover their overhead, they need to earn enough profit to satisfy their shareholders, something DeCA does not need to worry about.

CPFR's goal is to automate and improve sales forecasting and replenishment between trading partners throughout the supply chain. DeCA is already part way there. They trust their distributors and vendors; they have an EDI based system, CAO; and they have flexible, trained employees that communicate. By adopting CPFR, DeCA may be able to realize performance improvements throughout their supply chain with reduced inventories and reduced transportation costs. For this to become a reality, DeCA would need to implement an automated information system and collaborative relationship with its trading partners. Due to DeCA's cost plus model, it may not experience the savings its commercial counterparts might experience; however, those savings spread across all of DeCA would still be substantial and could be passed on to its patrons.

#### **Investigative Question Four**

*What strategies would prove effective in implementing CPFR in DeCA?*

It is important to remember what is significant to the organization when implementing change. With this in mind, negotiations concerning which strategies will work between trading partners can begin. As stated earlier in this paper, the CPFR process is comprised of eight tasks, but these tasks do not have to be completed in order nor does every task need to be completed. However, there are a couple of strategies that DeCA should implement for a successful CPFR experience should they decide to do so.

First, DeCA needs executive support or the process will falter. DeCA should ensure they have an internal culture that values cooperation and communication between its own departments as well as a commitment and willingness to share information with their trading partner whether that is with their distributor, manufacturer, or both (VICS,



1999, p. 8). They then need to evaluate whether their trading partner also has a similar culture and a willingness to share information.

Second, once the partnership is agreed upon, the trading partners need to develop a joint partnership strategy. The partnership strategy will outline business goals for the relationship and define the scope of the collaboration effort each would like to implement. The business goals will also assign the roles and responsibilities each trading partner will be responsible for. In addition, the partnership strategy will outline a joint business plan that identifies significant events such as promotions and product introductions that could affect supply and demand (VICS, 2004a: 9).

Third, DeCA needs to establish a training strategy to ensure its employees understand what CPFR is, its purpose, advantages, and why it is being implemented. Without employee buy-in and understanding, the process will fail.

Finally, DeCA needs to develop an implementation strategy with their trading partner. The implementation strategy will include their forecast strategy and define when and how to present their selected product(s). It will discuss order generation, exception management, and outline performance measures that trading partners can follow to assess the progress of the CPFR process. It should also discuss how each partner will share the benefits of this process (VICS, 2004a: 10).

For DeCA to effectively implement CPFR, it would need to adopt the following strategies: first, they will need executive support and ensure they have an internal culture that not only values communication and cooperation but also has a willingness to share information with their trading partners; second, they will need to build a joint business strategy that outlines their business goals and defines the scope of their collaboration as

well as their roles and responsibilities; third, DeCA will need to establish a training strategy; and fourth, they will need to develop an implementation strategy that includes their forecast strategy and performance measures. This is by no means an exhaustive list of business strategies needed for a successful CPFR implementation but should provide the basis needed to start. As the actual process unfolds between partners, other strategies needed to overcome barriers will become apparent.

## **Chapter Summary**

This chapter presented the sampling technique used in selecting the different commercial supermarket chains. It also explained DeCA's CAO process and how it compares to the commercial grocery industry's process. In addition, this chapter discussed the various hurdles encountered while attempting to answer four investigative questions using data gathered from the literature review as well as data gathered through the interview process.

First, the process currently employed by DeCA was discussed with considerable emphasis placed on their internal CAO automated process. The analysis for this process gave some indication of how DeCA plans, forecasts, and replenishes inventory items. CAO automatically generates store replenishment orders which are transmitted electronically to DIBS. Orders are then transmitted to, and confirmed by, the appropriate supplier as an EDI transaction. If a commissary notices an NIS item, it calls the appropriate distributor who either ships additional merchandise or calls the manufacturer

to order additional items so the NIS condition can be corrected. In addition, the commissary also carries vendor managed inventory items.

Second, the CPFR pilot study between Nabisco and Wegmans was presented to show how CPFR could benefit other organizations. Because of the difficulty encountered in obtaining information during the interview process, it was somewhat difficult to evaluate the benefits realized by comparable grocery store chains that have implemented CPFR. However, relying on the well documented Wegmans and Nabisco pilot study conducted, and the fact that other supermarket chains as well as superstores like Wal-Mart are exploring CPFR's benefits with their own studies, it can be surmised that CPFR has provided a positive benefit with reduced costs, increased sales, improved forecasting, and reduced inventory.

Third, the areas where DeCA can realize performance improvements by adopting CPFR were discussed. CPFR's goal is to automate and improve sales forecasting and replenishment between trading partners throughout the supply chain. DeCA is already part way there. They trust their distributors and vendors; they have an EDI based system, CAO; and they have flexible, trained employees that communicate. By adopting CPFR, DeCA may be able to realize performance improvements throughout their supply chain with reduced inventories and reduced transportation costs. For this to become a reality, DeCA would need to implement an automated information system and collaborative relationship with its trading partners. Due to DeCA's cost plus model, it may not experience the savings its commercial counterparts might experience; however, those savings spread across all of DeCA would still be substantial and could be passed on to its patrons.

Finally, effective strategies to implementing CPFR were presented. First, they will need executive support and ensure they have an internal culture that not only values communication and cooperation but also has a willingness to share information with their trading partners. Once they have executive support, they will need to build a joint business strategy with their trading partners that outline their business goals and define the scope of their collaboration as well as their roles and responsibilities. Next, DeCA will need to establish a training strategy to ensure their employees understand the purpose and benefit of CPFR. And fourth, they will need to develop an implementation strategy that includes their forecast strategy and performance measures. This is by no means an exhaustive list of business strategies needed for a successful CPFR implementation but should provide the basis needed to start. As the actual process unfolds between partners, other strategies needed to overcome barriers will become apparent.

Chapter V will discuss the primary research question, limitations encountered during this research, and recommendations for future research.

## **V. Discussion**

### **Chapter Overview**

This chapter addresses the primary research question and presents an overall conclusion to this research. In addition, it will discuss the limitations experienced and address some recommendations for future research.

### **Research Question**

The purpose of this research was to answer the question: Are there unique issues that the Defense Commissary Agency (DeCA) must consider before implementing the Collaborative Planning, Forecasting, and Replenishment (CPFR) process? Four investigative questions were developed to address the issues associated with this question. As the investigative questions were answered through the literature review and the interviews, an answer began to develop. The first two questions focused on current DeCA processes and benefits gained by commercial grocery store chains that have already implemented CPFR. The information from those two questions was then used to help answer the last two questions. DeCA's current processes were compared with the processes used by supermarkets that have implemented CPFR to determine if and where DeCA could improve their processes and what strategies could help them improve those processes.

## **Overall Research Conclusion**

Based on the limited data this research effort was able to collect, there really is not enough information to truly ascertain whether DeCA could benefit from implementing the CPFR process. However, given the fact that all three commercial grocery store chains mentioned are pursuing CPFR implementation, the nature and success of the Nabisco and Wegmans pilot study, and the success of other non-grocery industry pilot studies encountered throughout this research, there is no reason to suspect that DeCA would not be able to benefit from such a business tool as well.

Therefore, this researcher concludes that DeCA could successfully implement the CPFR process and realize at least minimal savings not only for their organization but for their patrons as well. There are definitely some issues that DeCA would have to overcome before and during CPFR implementation and these issues were discussed throughout investigative questions three and four in Chapter IV. However, there are bound to be more issues that DeCA will have to consider as they delve into the CPFR process. Contracts involving government agencies are governed by the federal acquisition regulation, for example, and there may be some requirements unknown to this researcher and those members of DeCA who were interviewed that could hamper CPFR implementation.

CPFR is not the process to use for every organization nor is it the process to use for every product. DeCA has some products and items that should not be subjected to the CPFR process, at least not at first. These products include vendor managed items such as drinks, chips, and breads. They also include perishables such as meats and produce.

According to Long, meats and produce, because they are perishables, are contracted for locally near each commissary (2004).

Currently, most grocery retailers are sticking with non-perishables until they feel confident with the CPFR process. Wal-Mart with its pilot study trading partners Chiquita, CHRobinson, Melissa's, Fresh Express, and Martori Brothers as well as Del Monte are the few grocery industry organizations who have tried on the produce side (Perishables in Supermarkets, 2001: 8). If DeCA did decide to let a commissary try CPFR with produce, they would be one of the first in the grocery industry to do so and could be one of the first to set the standard with these perishable items.

### **Research Limitations**

The biggest limitation encountered during this research was the censored or lack of data received during the interview process. Each commercial organization's corporate logistician was contacted but as mentioned in Chapter IV, interview responses from each grocery store chain selected was very disappointing. An attempt was made to contact the Kroger corporate procurement office as well with no response. Very minimal, if any, information on each organization's CPFR process was divulged during this interview process. What was provided was filtered to protect their proprietary data. Therefore, this research had to rely on published literature alone to formulate a response to investigative question two. The individuals interviewed at DeCA were more forthcoming about their current business strategies and processes but were still concerned about their information getting to their competitors.

Time for this research was another limitation due mostly to a research topic change outside of this researcher's control two months prior to graduation. Additional time could have allowed for this research to collect more information about DeCA's processes, provided a trip to their headquarters office at Fort Lee, Virginia to gain access to their defense commissary agency directives, offered time to review current demand forecast and inventory cost data compared to theorized CPFR process cost data, and contact different commercial grocery industry retailers and suppliers as well as DeCA's distributors.

Finally, researcher bias may have been a factor. During the literature review, this researcher became excited about all the positive aspects of the CPFR process to the point that it did not seem possible this process could not benefit everyone. This view was held until further research pointed out that CPFR is not for everyone or for every type of item. Being cognizant of this potential for bias, the researcher concentrated on only asking the interview questions mentioned in Chapter III along with additional interview questions that pertained only to current business processes. Still, the original point of view could have impacted the interpretation of some of the interview data collected.

### **Recommendations for Future Research**

CPFR is a relatively new business process that applies across all types of industries so there are a myriad of areas that could be pursued for future research. Keeping with this research topic, the number of future research opportunities is immensely reduced.



One future research effort could be in the area of cost. Cost data can be examined to compare the savings benefits expected from CPFR against the manpower and time it takes to implement the CPFR process in DeCA. In addition, one should delve deeper into the contract requirements with which DeCA is mandated to adhere. These contract requirements may have a direct affect on the costs DeCA must bear with their suppliers. According to Mr. Joe Andraski, “The VICS CPFR Committee has developed a CPFR Benefits Calculator, where a user enters in their financial statement and balance sheet information and then key financial results from CPFR based on best in class metrics are then provided as estimates of potential benefits for their firm.” (2001: 3).

Another possible research topic could be a follow on to this study in order to gather more in-depth data. DeCA directives could be reviewed to gain more insight into DeCA processes, visits to DeCA’s distributors could be made to gather information from them as suppliers, and time could be spent at the commissary to further observe local operations. This data would then be analyzed to ascertain whether CPFR could indeed benefit DeCA and its patrons. If so, the data could be evaluated to see if the entire CPFR model or a partial model would be more advantageous to DeCA. If not, what circumstances, if any, would DeCA and its suppliers need in place to benefit from CPFR?

Research could also be expanded to include multiple suppliers, distributors and manufacturers, throughout DeCA’s entire supply chain. This research effort would be used to see if further savings could be passed on to DeCA’s patrons through reductions in supplier inventory and transportation requirements.

A more narrowed research objective would be to focus specifically on the individual aspects or tasks of the CPFR process as they would apply to DeCA. One

could look into how the front-end agreement would be structured, what role each trading partner should accept responsibility for, what performance measures should be tracked, what information should be shared, which items would be best for DeCA to implement CPFR with, and how should the benefits gained from implementing CPFR be shared. Granted, these are all areas that must be decided upon by the trading partners themselves, but they are all still areas that could be researched to further DeCA's understanding of CPFR and the benefits it affords.

Of course, a departure from DeCA would be to look at similar areas for research at commercial grocery industry stores, to look at their suppliers, or to look at both.

## **Conclusions**

This chapter summarized the research effort and answered the overall research question. It also discussed research limitations and reviewed several topics for future research.

Most companies, DeCA included, have already experienced cultural changes through reorganizations and policy changes. They have found that implementing the change is the easy part, changing the culture is the difficult part. Implementing CPFR itself is not hard but it does take time and involvement from everyone in the organization from the worker all the way up to the executive. And, CPFR includes trading partners. The cultural change required to share information alone can be a difficult hurdle, but that is the key to a successful CPFR process. Once that hurdle is breached, the other hurdles will be overcome as well and everyone involved will benefit from CPFR's advantages.

## Appendix A. VICS CPFR Model



Figure 1. **VICS CPFR® Model** (VICS, 2004a: 11)

The complete VICS CPFR: An Overview can be referenced at <http://www.cpfr.org>.

## **Appendix B. Initial Contact for Industry Interviews**

A two-step process was used during the interview process. First, each interview candidate was contacted via telephone after identifying which organizations to contact through the literature review. This telephone call was followed by an e-mail message that provided background on the research being conducted and requested a date and time for a more in-depth conversation after the interviewee had an opportunity to review the interview questions. In one case, initial contact was never made so an interview was not scheduled. The commercial grocery stores elected to respond to the interview questions with an electronic response via e-mail. The DeCA interviewees responded both verbally and electronically with a personal interview being conducted at the Wright-Patterson AFB commissary.

If an interview was conducted via telephone, the responses were typed and returned to the individual for approval and verification.

Each e-mail was tailored to whether the interview was conducted with someone associated with a commercial grocery store or with DeCA. A sample of the e-mail messages sent to individuals interviewed in the commercial grocery industry and at DeCA follows:

NOTE: Process and interview question messages were adapted from a Graduate Research Project by Major Kristina Obrien, 2004, Appendix A, pages 94-96.

## Interview Question Message for Commercial Grocery Store

Thank you in advance for volunteering to assist with this Air Force Institute of Technology (AFIT) research effort!

Please reference our conversation on \_\_\_\_\_, a summary of the research's purpose and background follows, as well as five short interview questions.

I will call you at \_\_\_\_\_ to conduct the interview.

Please respond to the questions and return to me by \_\_\_\_\_.

Please respond only to the questions listed below. This research objective is not aimed at collecting company or corporate strategy information. It is interested in the CPFR process and its impacts, benefits and non-benefits, to your organization.

**Purpose:** The purpose of this research is to determine if the collaborative planning, forecasting, and replenishment (CPFR) process being piloted and used by the commercial grocery industry can be used by and benefit the Defense Commissary Agency (DeCA) to provide further cost savings to its customers. The primary objectives of this research are two-fold: to identify the current processes being used by DeCA and evaluate their adequacy in fully meeting their goal of quality goods at the lowest possible cost. Once these processes are identified, this research will look at the CPFR process and how it is being used in the grocery chain industry to see if further savings can be realized by DeCA if it were to adopt such a process. These savings could be passed on to DeCA's patrons.

**Background:** For years, DeCA has provided quality goods at the lowest possible cost to authorized patrons. Authorized patrons are limited to active and reserve members of the Armed Forces and their dependents to include those retired from military service. DeCA's mission is to ensure military readiness and retention of quality personnel by providing a part of the military compensation package. The commissary privilege ranks towards the top of most military and retired members' list of valued benefits. DeCA provides this benefit through savings on food purchases and household items and it supports this benefit by purchasing the equipment, services, and supplies needed for its operational and administrative requirements.

While DeCA has succeeded admirably in its mission to the troops, the perception is its hands appear somewhat tied by antiquated electronic systems and business practices which make it difficult for DeCA to realize the flexibility and streamlined processes inherent in collaborative markets. Can DeCA's goal of providing goods at the lowest possible cost be further improved?

**Confidentiality of Responses:** This information is being collected for research purposes only. The write up and analysis of the interview will be compared to current CPFR practices and issues experienced in the commercial grocery industry. Your job title will be included in the research report, and your name will be used as a source only if you

grant permission. If not, you will be identified with a letter, such as “A” or “B” and your position will be identified at the local, zone, regional, or headquarters level. No one in your organization will see your responses, and your name and specific organization will remain confidential.

**Question 1:** How has the CPFR process impacted product availability?

**Question 2:** How has the CPFR process affected the suppliers cost to deliver?

**Question 3:** How has the CPFR process affected sales growth?

**Question 4:** How has the CPFR process impacted planning systems?

**Question 5:** How has the CPFR process impacted the customer?

Thank you again for your assistance, and I look forward to speaking to you on \_\_\_\_\_.

Thank you again for your assistance, and I look forward to receiving your responses.

Please contact me with questions at any time—

Ray  
RAYMOND H. SMITH, JR., Major, USAF  
Intermediate Developmental Education Student  
AFIT/ENS  
Wright-Patterson AFB, OH 45433-7765  
Email: [raymond.smith@afit.edu](mailto:raymond.smith@afit.edu)  
Phone (Voice Mail): (937) 785-6565, ext. 6649  
Phone (Cell): (937) 681-4276

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### PRIVACY ACT STATEMENT

In accordance with AFI 37-132, paragraph 3.2, the information below is provided as required by the Privacy Act of 1974.

**Authority:** 10 U.S.C. 8012, Secretary of the Air Force; powers and duties; delegation by; implemented by AFI 36-2601, USAF Survey Program.

**Purpose:** To evaluate the influence of shift work and overtime on the job satisfaction of Air Force members.

**Routine Use:** To increase understanding of factors affecting retention. No analyses of individual responses will be conducted. Reports summarizing trends in large groups of people may be published.

**Disclosure:** Participation is VOLUNTARY. No adverse action will be taken against any member who does not participate in this survey or who does not complete any part of this survey.

---

## Interview Question Message for DeCA

Thank you in advance for volunteering to assist with this Air Force Institute of Technology (AFIT) research effort!

Reference our conversation on \_\_\_\_\_, a summary of the research's purpose and background follows, as well as three short interview questions.

I will call you at \_\_\_\_\_ to conduct the interview.

Please respond to the questions and return to me by \_\_\_\_\_.

**Purpose:** The purpose of this research is to determine if the collaborative planning, forecasting, and replenishment (CPFR) process being piloted and used by the commercial grocery industry can be used by and benefit the Defense Commissary Agency (DeCA) to provide further cost savings to its customers. The primary objectives of this research are two-fold: to identify the current processes being used by DeCA and evaluate their adequacy in fully meeting their goal of quality goods at the lowest possible cost. Once these processes are identified, this research will look at the CPFR process and how it is being used in the grocery chain industry to see if further savings can be realized by DeCA if it were to adopt such a process. These savings, in turn, could then be passed on to DeCA's patrons.

**Background:** For years, DeCA has provided quality goods at the lowest possible cost to authorized patrons. Authorized patrons are limited to active and reserve members of the Armed Forces and their dependents to include those retired from military service. DeCA's mission is to ensure military readiness and retention of quality personnel by providing a part of the military compensation package. The commissary privilege ranks towards the top of most military and retired members' list of valued benefits. DeCA provides this benefit through savings on food purchases and household items and it supports this benefit by purchasing the equipment, services, and supplies needed for its operational and administrative requirements.

While DeCA has succeeded admirably in its mission to the troops, the perception is its hands appear somewhat tied by antiquated electronic systems and business practices which make it difficult for DeCA to realize the flexibility and streamlined processes inherent in collaborative markets. Can DeCA's goal of providing goods at the lowest possible cost be further improved?

**Confidentiality of Responses:** This information is being collected for research purposes only. The write up and analysis of the interview will be compared to current CPFR practices and issues experienced in the commercial grocery industry. Your job title will be included in the research report, and your name will be used as a source only if you grant permission. If not, you will be identified with a letter, such as "A" or "B" and your

position will be identified at the local, zone, regional, or headquarters level. No one in your organization will see your responses, and your name and specific organization will remain confidential.

**Question 1:** How does DeCA share forecast information with their suppliers?

**Question 2:** How does DeCA conduct their replenishment operations with their suppliers?

**Question 3:** How does DeCA share planning information with their suppliers?

Thank you again for your assistance, and I look forward to speaking to you on \_\_\_\_\_.

Thank you again for your assistance, and I look forward to receiving your responses.

Please contact me with questions at any time—

Ray  
RAYMOND H. SMITH, JR., Major, USAF  
Intermediate Developmental Education Student  
AFIT/ENS  
Wright-Patterson AFB, OH 45433-7765  
Email: [raymond.smith@afit.edu](mailto:raymond.smith@afit.edu)  
Phone (Voice Mail): (937) 785-6565, ext. 6649  
Phone (Cell): (937) 681-4276

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**Routine Use:** To increase understanding of factors affecting retention. No analyses of individual responses will be conducted. Reports summarizing trends in large groups of people may be published.

**Disclosure:** Participation is VOLUNTARY. No adverse action will be taken against any member who does not participate in this survey or who does not complete any part of this survey.

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REPORT DOCUMENTATION PAGE				Form Approved OMB No. 074-0188	
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1. REPORT DATE (DD-MM-YYYY) 14-09-2004		2. REPORT TYPE Graduate Research Project		3. DATES COVERED (From – To) Sept 2003– Sept 2004	
4. TITLE AND SUBTITLE COLLABORATIVE PLANNING, FORECASTING, AND REPLENISHMENT IN THE GROCERY INDUSTRY AND DEFENSE COMMISSARY AGENCY				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)  Smith, Raymond H. Jr., Major, USAF				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S) Air Force Institute of Technology Graduate School of Engineering and Management (AFIT/EN) 2950 Hobson Way, Building 640 WPAFB OH 45433-8865				8. PERFORMING ORGANIZATION REPORT NUMBER  AFIT/MLM/ENS/04-11	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT  APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT <p>The Defense Commissary Agency (DeCA) continually strives to improve the level of customer service it provides to its patrons. The <i>DeCA Business Guide: A Business Guide for Marketing to the Defense Commissary Agency</i> (2002) provides a foundation for how DeCA conducts business with its suppliers. DeCA's mission is to ensure military readiness and retention of quality personnel by providing a part of the military compensation package, and its goal is to provide quality goods at the lowest possible cost to authorized patrons (2).</p> <p>This project looks at DeCA's current business processes as well as the relatively new business process of Collaborative Planning, Forecasting, and Replenishment (CPFR) used by some of the major supermarket chains in the commercial grocery industry. In what areas can DeCA realize performance improvements by adopting CPFR? And what strategies would prove effective in implementing CPFR at DeCA?</p> <p>This project is not offering any significant statistical analysis, but it is attempting to provide a further understanding of DeCA's business processes and how those processes may be enhanced through CPFR. In turn, DeCA's mission and goal may not only be more easily met, but DeCA's processes may also become more in line with their commercial counterparts.</p>					
15. SUBJECT TERMS  Collaboration, Collaborative Planning Forecasting and Replenishment, CPFR, Defense Commissary Agency, DeCA					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Stephan P. Brady, Lt Col, USAF
U	U	U	UU	69	19b. TELEPHONE NUMBER (Include area code) (937) 255-3636 ext. 4701 (stephan.brady@afit.edu)